crosscuttingconcepts
empowering the next generation in science education

GHS Safety Data Sheets

The Mystery of Lyle and Louise

Questioned Documents Analysis

This document contains GHS safety data sheets for the following kit items:

- **Silica Gel**
- **TLC Solvent**

Safety Data Sheet

Crosscutting Concepts, LLC · P.O. Box 349 · Huntington, WV 25708
Phone: 888-221-4344 · Fax: 888-221-4344, Ext. 804

Section 1 - Chemical Product and Company Identification

Name: Silica Gel TLC Plate
Common names: Amorphous Silica Gel, Silicon Dioxide, Reversed Phase Silica Gel, Bonded Phase Silica Gel

Chemtrec Phone: 800-424-9300
National Response Center 800-424-8802

Product Use: Laboratory diagnostics
Product Number: VIH10168

Section 2 - Hazard Identification

SKIN IRRITANT Category 3: WARNING, Causes mild skin irritation
Transportation symbol: none
Emergency Overview
Warning: May cause dryness, irritation, or abrasion to mucous membranes or skin.
Effects of overexposure: N/A
Target organs: N/A

Section 3 - Composition / Information on Ingredients

Ingredient	CAS No.	Percent
Silicon Dioxide	112926-00-8	99%

Section 4 - First Aid Measures

INGESTION: Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.
INHALATION: Remove to fresh air. Do not breath dust. Drink water to clear throat. Blow nose to evacuate dust.
SKIN CONTACT: Wash exposed area with soap and water. Get medical advice if irritation develops.
EYE CONTACT: Wash/flush thoroughly with water. Get medical advice if irritation develops.

Section 5 - Fire-Fighting Measures

General information: Not considered to be a fire or explosion hazard. Use protective clothing and breathing equipment appropriate for the surrounding fire.
Extinguishing Media: Use any means suitable for extinguishing surrounding fire.
Flash Point: N/A
Autoignition temperature: N/A
Explosion Limits: Lower: N/A **Upper:** N/A

Section 6 - Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Vacuum or sweep up and containerize for waste disposal. Wet sweeping may be used to avoid dust dispersal. Dispose in approved landfills.

Section 7 - Handling and Storage

Handling: Avoid prolonged or repeated skin contact.
Storage: Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage.

Section 8 - Exposure Controls / Personal Protection

Airborne Exposure Limits:
OSHA Permissible Exposure Limit (PEL): Ethyl Acetate, Isopropyl Achohol, Nitrocellulose: 400 ppm. Butyl Acetate, Polyester Resin: 150 ppm. Triphenyl Phosphate: 3 ppm.
ACGIH Threshold Limit Value (TLV): Ethyl Acetate, Isopropyl Achohol: 400 ppm. Butyl Acetate, Polyester Resin: 150 ppm. Triphenyl Phosphate: 3 ppm.
ACGIH Biological Exposure Indices (BEI): No information found

NIOSH Recommended Exposure Limit (REL): No information found
Personal Respirators: NIOSH/MSHA approved respirator. Select respiratory device based on concentrations of actual or potential airborne contaminants.
Skin Protection: Wear protective gloves and clean body-covering clothing.
Eye Protection: Use chemical safety glasses with side shields. Maintain eye wash fountain and quick-drench facilities in work area.
Airborne Exposure Limits: OSHA Permissible Exposure Limit (PEL) 8 hour: 15 mg/m3 total dust, 5 mg/m3 respirable fraction for nuisance dusts. ACGIH Threshold Limit Value (TLV): 10 mg/m3 total dust containing no asbestos and <1% crystalline silica for Particulates Not Otherwise Classified (PNOC).
Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
General: Wash after handling. Avoid contact and inhalation. Avoid prolonged or repeated exposure. Keep tightly closed. Store in a cool dry place.

Section 9 - Physical and Chemical Properties

Appearance: Off-white powder
Odor: Oderless
Odor Threshold: No information found
pH: 4-8
Melting Point: >1700C
Boiling Point: No information found
Flash Point: No information found
Evaporation Rate (BuAc=1): N/A
Flammability: Not flammable
Flammability/explosive limits: No information found
Vapor Density (Air=1): N/A
Vapor Pressure (mm Hg): N/A
Relative Density/Specific Gravity: 2.5-3.5
Solubility: Insoluble in water
Partition Coefficient: No information found.
Auto-ignition Temperature: No information found.
Decomposition Temperature: No information found.
Viscosity: N/A

Section 10 - Stability and Reactivity

Reactivity: Evolves heat on contact with water
Chemical stability: Stable
Hazardous Reactions: Water, strong acids, hydrogen fluoride, hydrofluoric acid
Conditions to avoid: Water, incompatible materials.
Incompatible materials: Water, strong acids, hydrogen fluoride, hydrofluoric acid
Hazardous decomposition products: No information found
Hazardous polymerization: Will not occur.

Section 11- Toxicological Information

LD50/LC50 data not found
Effects of overexposure: May cause skin irritation. May be harmful if absorbed through the skin.
Causes eye irritation.
Harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.
May be harmful if swallowed.
Chronic effects: Target organs: lungs

Section 12 - Ecological Information

No information available

Section 13 - Disposal Considerations

Dispose of in a landfill site approved for chemical and hazardous wastes, in accordance with all local, state and federal regulations or contract with a licensed chemical disposal agency. Material is non-hazardous per 40 CFR 261

Section 14 - Transport Information

Road Transport – 49 CFR (GROUND): Consumer Commodity, ORM-D. Class 3, Packaging Group II, Label 3, UN Number 1263
Maritime Transport: UN Number 1263, Class 3, Packaging Group II, EMS Number 3-05, Flash Point 24F, Method TCC
IATA (Air): Consumer Commodity. UN Number ID8000-1263, Class 9, Packaging Group II, Packaging Instructions: Y963 (Passenger and cargo)

Section 15 - Regulatory Information

N/A

Section 16 - Other Information

Updated May 21, 2015

WHMIS: SDS prepared according to hazard criteria of controlled products regulations (CPR) and SDS contains all information required by CPR.

The above information has been developed based upon currently available scientific data. New information may be developed from time to time which may render the conclusions of this report obsolete. Therefore, no warranty is extended as to the applicability of this information to the user's intended purpose or for the consequences of its use or misuse. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Crosscutting Concepts, LLC shall not be held liable for any damage resulting from handling or from contact with the above product.

Safety Data Sheet

Crosscutting Concepts, LLC · P.O. Box 349 · Huntington, WV 25708
Phone: 888-221-4344 · Fax: 888-221-4344, Ext. 804

Section 1 - Chemical Product and Company Identification

Name: TLC Solvent
Common names: Solvent, Dimethylketone, 2-Propanone

Chemtrec Phone: 800-424-9300
National Response Center 800-424-8802

Product Use: Laboratory reagent
Product Number: VIH10263

Section 2 - Hazard Identification

FLAMMABLE LIQUID Category 2: DANGER, Highly flammable liquid and vapor
Transportation symbol: Flame
Emergency Overview
Warning: May cause dryness or irritation to mucous membranes or skin.
Effects of overexposure:
Acetone: Prolonged or repeated skin contact may cause dermatitis. Chronic inhalation may cause effects similar to those of acute inhalation. Matsushita et al. exposed human volunteers 6 hours/day for 6 days at 500 ppm and found hematologic changes including significantly increased leukocyte and eosinophil counts and decreased neutrophil phagocytic activity.
Ethanol: May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects. Animal studies have reported the development of tumors. Prolonged exposure may cause liver, kidney, and heart damage.

Section 3 - Composition / Information on Ingredients

Ingredient	CAS No.	Percent
Acetone (C3H6O)	67-65-1	50%
Ethanol (C2H4OH)	64-17-5	40%

Section 4 - First Aid Measures

INGESTION: Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.
INHALATION: Remove to fresh air immediatey. If breathing is difficult, give oxygen. Get medical attention for any breathing difficulty. Do not use mouth-to-mouth resuscitation.
SKIN CONTACT: Wash exposed area with soap and water. Get medical advice if irritation develops.
EYE CONTACT: Wash/flush thoroughly with water. Get medical advice if irritation develops.

Section 5 - Fire-Fighting Measures

General information: Extremely flammable liquid and vapor. Vapor may cause flash fire. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.
Containers can build up pressure if exposed to heat and/or fire. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool.
Extinguishing Media: Use dry chemical, carbon dioxide, or appropriate foam. Water may be ineffective because it will not cool material below its flash point.
Flash Point: Acetone: -20C Ethanol: 16.6C
Autoignition temperature: Acetone: 465C Ethanol 363C

Explosion Limits: Lower: N/A **Upper:** N/A

Section 6 - Accidental Release Measures

Absorb spill with inert material such as vermiculite and place is suitable container. Avoid runoff into drains which lead to waterways. Wear appropriate personal protective equipment as specified in Section 8. Use only non-sparking tools and equipment.

Section 7 - Handling and Storage

Handling: Avoid prolonged or repeated skin contact.
Storage: Keep away from sources of ignition. Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage.

Section 8 - Exposure Controls / Personal Protection

Airborne Exposure Limits:
OSHA Permissible Exposure Limit (PEL): Acetone: 750 ppm TWA; 1800 mg/m3 TWA
Ethanol: 1000 ppm TWA; 1900 mg/m3 TWA
ACGIH Threshold Limit Value (TLV): No information found
ACGIH Biological Exposure Indices (BEI): No information found
NIOSH Recommended Exposure Limit (REL): No information found
Personal Respirators: NIOSH/MSHA approved respirator. Select respiratory device based on concentrations of actual or potential airborne contaminants.
Skin Protection: Wear protective gloves and clean body-covering clothing.
Eye Protection: Use chemical safety glasses with side shields. Maintain eye wash fountain and quick-drench facilities in work area.
Airborne Exposure Limits: No information found
Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
General: Wash after handling. Avoid contact and inhalation. Avoid prolonged or repeated exposure. Keep tightly closed. Store in a cool dry place.

Section 9 - Physical and Chemical Properties

Appearance: Clear liquid
Odor: Sweet
Odor Threshold: No information found
pH: 6.5-8
Melting Point: Acetone: -94C Ethanol: -114C
Boiling Point: Acetone: 56C Ethanol: 78C
Flash Point: No information found
Evaporation Rate (BuAc=1): No information found
Flammability: Highly flammable
Flammability/explosive limits: No information found
Vapor Density (Air=1): No information found
Vapor Pressure (mm Hg): No information found
Relative Density/Specific Gravity: 1.03 g/mL
Solubility: Soluble in water
Partition Coefficient: No information found.
Auto-ignition Temperature: No information found.
Decomposition Temperature: No information found.
Viscosity: No information found

Section 10 - Stability and Reactivity

Reactivity: Nonreactive
Chemical stability: Stable
Hazardous Reactions: No information found
Conditions to avoid: Incompatible materials, ignition sources, excess heat, oxidizers.

Incompatible materials: Strong oxidizing agents, acids, alkali metals, ammonia, hydrazine, peroxides, sodium, acid anhydrides, calcium hypochlorite, chromyl chloride, nitrosyl perchlorate, bromine pentafluoride, perchloric acid, silver nitrate, mercuric nitrate, potassium-tert-butoxide, magnesium perchlorate, acid chlorides, platinum, uranium hexafluoride, silver oxide, iodine heptafluoride, acetyl bromide, disulfuryl difluoride, tetrachlorosilane + water, acetyl chloride, permanganic acid, ruthenium (VIII) oxide, uranyl perchlorate, potassium dioxide.
Hazardous decomposition products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous polymerization: Will not occur.

Section 11- Toxicological Information

Acetone:
RTECS#:
CAS# 67-64-1: AL3150000
LD50/LC50:
CAS# 67-64-1:

Dermal, guinea pig: LD50 = >9400 uL/kg;
Draize test, rabbit, eye: 20 mg Severe;
Draize test, rabbit, eye: 20 mg/24H Moderate;
Draize test, rabbit, eye: 10 uL Mild;
Draize test, rabbit, skin: 500 mg/24H Mild;
Inhalation, mouse: LC50 = 44 gm/m3/4H;
Inhalation, rat: LC50 = 50100 mg/m3/8H;
Oral, mouse: LD50 = 3 gm/kg;
Oral, rabbit: LD50 = 5340 mg/kg;
Oral, rat: LD50 = 5800 mg/kg;

Carcinogenicity: CAS# 67-64-1: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
Epidemiology: In a series of studies, no statistically significant differences in causes of death or clinical laboratory results were observed in 948 employees exposed to up to 1070 ppm acetone over 23 years.
Teratogenicity: Animal studies have only shown harmful effects in the offspring of animals exposed to doses which also produced significant maternal toxicity.
Reproductive Effects: During the Stewart et al. study, four adult female volunteers were exposed 7.5 hours to acetone vapor at a nominal concentration of 1000 ppm.Three of the four women experienced premature menstrual periods which were attributed to the acetone exposure.
Mutagenicity: Sex chromosome loss and nondisjunction(Yeast - Saccharomyces cerevisiae) = 47600 ppm; Cytogenetic analysis(Rodent - hamster Fibroblast)= 40 gm/L.
Neurotoxicity: No information found

Ethanol:
RTECS#:
CAS# 64-17-5: KQ6300000
LD50/LC50:
CAS# 64-17-5:

Draize test, rabbit, eye: 500 mg Severe;
Draize test, rabbit, eye: 500 mg/24H Mild;
Draize test, rabbit, skin: 20 mg/24H Moderate;
Inhalation, mouse: LC50 = 39 gm/m3/4H;
Inhalation, rat: LC50 = 20000 ppm/10H;
Oral, mouse: LD50 = 3450 mg/kg;
Oral, rabbit: LD50 = 6300 mg/kg;
Oral, rat: LD50 = 7060 mg/kg;
Oral, rat: LD50 = 9000 mg/kg;

Carcinogenicity: CAS# 64-17-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: Ethanol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals. Prenatal exposure to ethanol is associated with a distinct pattern of congenital malformations that have collecetively been termed the "fetal alcohol syndrome".
Teratogenicity: Oral, Human - woman: TDLo = 41 gm/kg (female 41 week(s) after conception) Effects on Newborn - Apgar score (human only) and Effects on Newborn - other neonatal measures or effects and Effects on Newborn - drug dependence.
Reproductive Effects: Intrauterine, Human - woman: TDLo = 200 mg/kg (female 5 day(s) pre-mating) Fertility - female fertility index (e.g. # females pregnant per # sperm positive females; # females pregnant per # females mated).
Neurotoxicity: No information available.
Mutagenicity: DNA Inhibition: Human, Lymphocyte = 220 mmol/L.; Cytogenetic Analysis: Human, Lymphocyte = 1160 gm/L.; Cytogenetic Analysis: Human, Fibroblast = 12000 ppm.; Cytogenetic Analysis: Human, Leukocyte = 1 pph/72H (Continuous).; Sister Chromatid Exchange: Human, Lymphocyte = 500 ppm/72H (Continuous).
Other Studies: Standard Draize Test(Skin, rabbit) = 20 mg/24H (Moderate) Standard Draize Test: Administration into the eye (rabbit) = 500 mg (Severe).

Effects of overexposure: Acetone: Prolonged or repeated skin contact may cause dermatitis. Chronic inhalation may cause effects similar to those of acute inhalation. Matsushita et al. exposed human volunteers 6 hours/day for 6 days at 500 ppm and found hematologic changes including significantly increased leukocyte and eosinophil counts and decreased neutrophil phagocytic activity.
Ethanol: May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects. Animal studies have reported the development of tumors. Prolonged exposure may cause liver, kidney, and heart damageHarmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.
May be harmful if swallowed.
Chronic effects: Liver, kidney, heart damage

Section 12 - Ecological Information

Acetone:
Ecotoxicity: Fish: Rainbow trout: 5540 mg/l; 96-hr; LC50Fish: Bluegill/Sunfish: 8300 mg/l; 96-hr; LC50 No data available.
Environmental: Volatilizes, leeches, and biodegrades when released to soil. TERRESTRIAL FATE: If released on soil, acetone will both volatilize and leach into the ground. Acetone readily biodegrades and there is evidence suggesting that it biodegrades fairly rapidly in soils. AQUATIC FATE: If released into water, acetone will probably biodegrade. It is readily biodegradable in screening tests, although data from natural water are lacking. It will also be lost due to volatilization (estimated half-life 20 hr from a model river). Adsorption to sediment should not be significant.
Physical: ATMOSPHERIC FATE: In the atmosphere, acetone will be lost by photolysis and reaction with photochemically produced hydroxyl radicals. Half-life estimates from these combined processes are 79 and 13 days in January and June, respectively, for an overall annual average of 22 days. Therefore considerable dispersion should occur. Being miscible in water, wash out by rain should be an important removal process. This process has been confirmed around Lake Shinsei-ko in Japan. There acetone was found in the air and rain as well as the lake.
Other: No information available.
Ethanol:
Ecotoxicity: Fish: Rainbow trout: LC50 = 12900-15300 mg/L; 96 Hr; Flow-through @ 24-24.3°CFish: Rainbow trout: LC50 = 11200 mg/L; 24 Hr; Fingerling (Unspecified)Bacteria: Phytobacterium phosphoreum: EC50 = 34900 mg/L; 5-30 min; Microtox test When spilled on land it is apt to volatilize, biodegrade, and leach into the ground water, but no data on the rates of these processes could be found. Its fate in ground water is unknown. When released into water it will volatilize and probably biodegrade. It would not be expected to adsorb to sediment or bioconcentrate in fish.
Environmental: When released to the atmosphere it will photodegrade in hours (polluted urban atmosphere) to an estimated range of 4 to 6 days in less polluted areas. Rainout should be significant.
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Dispose of in a landfill site approved for chemical and hazardous wastes, in accordance with all local, state and federal regulations or contract with a licensed chemical disposal agency. Material is non-hazardous per 40 CFR 261

Section 14 - Transport Information

Section 15 - Regulatory Information

Section 16 - Other Information

Updated May 21, 2015

WHMIS: SDS prepared according to hazard criteria of controlled products regulations (CPR) and SDS contains all information required by CPR.

The above information has been developed based upon currently available scientific data. New information may be developed from time to time which may render the conclusions of this report obsolete. Therefore, no warranty is extended as to the applicability of this information to the user's intended purpose or for the consequences of its use or misuse. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Crosscutting Concepts, LLC shall not be held liable for any damage resulting from handling or from contact with the above product.